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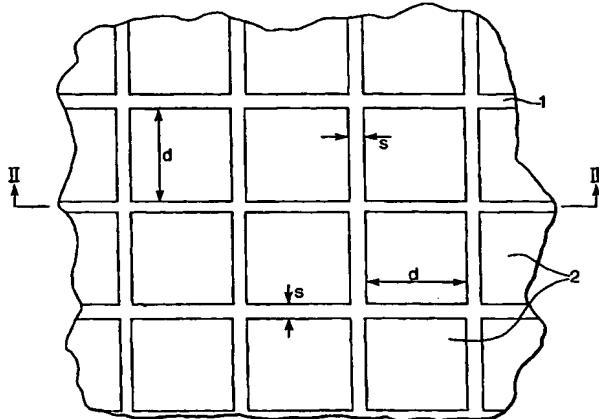
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[Continued on next page]

(54) Title: MICROWAVABLE PACKAGING MATERIAL



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(57) Abstract: A material for use in covering objects for microwave heating comprises a substrate (1) substantially transparent to microwave radiation bearing an array of low emissivity metal patch elements (2) defining a frequency selective surface adapted to pass microwave radiation and reflect thermal infrared radiation. The patch elements (2), typically of aluminium, preferably have a characteristic dimension no greater than about 500µm and a spacing no greater than about 100µm, while the emissivity of the combined substrate and frequency selective surface is preferably no greater than about 0.4. The material is useful as a packaging for chilled or frozen microwavable foodstuffs, where its low emissivity assists in thermal insulation during storage or transportation and capturing of heat within the package during microwave cooking, where it can be safely used despite the presence of metal in the structure due to its configuration as a frequency selective surface. Potential uses also include bandages or patches worn on the body during microwave heat treatment of sports injuries and the like and various other microwave heating applications.



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Application No

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## A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B65D81/34

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category <sup>a</sup>	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 354 973 A (BECKETT D GREGORY) 11 October 1994 (1994-10-11)	1-14
Y	the whole document ---	15, 16
X	US 5 256 846 A (WALTERS GLENN J) 26 October 1993 (1993-10-26)	1-13
A	the whole document ---	14
X	US 4 258 086 A (BEALL NELSON J) 24 March 1981 (1981-03-24)	1, 2, 4-13
A	the whole document ---	14
Y	WO 96/34810 A (ADVANCED DEPOSITION TECHNOLOGI) 7 November 1996 (1996-11-07) the whole document ---	15 -/-

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## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	WO 88/05249 A (MARDON SON & HALL LTD) 14 July 1988 (1988-07-14) the whole document -----	16

## INTERNATIONAL SEARCH REPORT

Application No  
PCT/GB 03/03861

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
US 5354973	A 11-10-1994	NONE		
US 5256846	A 26-10-1993	NONE		
US 4258086	A 24-03-1981	NONE		
WO 9634810	A 07-11-1996	US 5530231 A AT 180741 T CA 2211071 A1 DE 69602746 D1 DE 69602746 T2 EP 0824482 A1 ES 2133961 T3 JP 11504597 T WO 9634810 A2		25-06-1996 15-06-1999 07-11-1996 08-07-1999 07-10-1999 25-02-1998 16-09-1999 27-04-1999 07-11-1996
WO 8805249	A 14-07-1988	GB 2207589 A AU 1050688 A WO 8805249 A1 GB 2220334 A ,B		01-02-1989 27-07-1988 14-07-1988 04-01-1990